Recreation Carrying Capacity Analysis
Portage Creek

Glacier Ranger District
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Introduction

Portage Creek, a braided glacial stream, is located approximately 50 miles south of Anchorage, Alaska. This creek flows north westerly approximately six miles from its source in Portage Lake to its mouth near the head of Turnagain Arm. The area was named for its historic use as a portage between Prince William Sound to the east and Turnagain Arm to the west.

The upper two thirds of the creek as well as Portage Lake and Glacier are surrounded by federal land managed by the Chugach National Forest. The creek is confined between two transportation corridors, the Alaska Railroad to the north, and the Portage Glacier Road to the south.

Portage Valley has been one of the (if not *the*) top tourist destinations in Alaska for many years, due primarily to its glacial scenery and proximity to Anchorage. The valley floor is roughly a mile wide at the lake end, doubling in width near Turnagain Arm. A half-dozen glaciers on and between densely forested mountains rising 4500' provide a spectacular scenic setting for outdoor activities. The Forest Service manages lands in the valley to provide opportunities for a variety of non-motorized recreation, with two campgrounds, several day use sites, hiking trails, rustic boat launches, an award-winning visitor center and commercial tourism operations.

Portage Creek has been found eligible and suitable for inclusion as a Recreation River in the National Wild & Scenic River System. Its outstandingly remarkable values are scenery, visual features and recreational values.

This analysis starts with an overview of the creek, its recreation use, access points, and characteristics, continues with the purpose of the capacity analysis, forest management direction, issues and concerns, and concludes with capacity recommendations.

Recreation Use

The majority of this creek's recreation use occurs in the summer months. The creek's short length and convenient road access make day float trips on the entire length of the creek popular. It has a class II float rating, with shallow water, sweepers and cold water temperatures being the most hazardous features. Large cottonwood trees line the lower half of the creek's banks, and are regularly washed into the stream channel to become sweepers or strainers as the river meanders across its flood plain. Water temperatures seldom rise above 50°, kept cool by icebergs calved off the face of Portage Glacier. These bergs seldom make it into the creek, getting hung up in the shallow water where the lake drains into the creek. This shallow water can also be a problem for float trips on the rocky, upper stretches of the river.

Power boats are used on the deeper, lower half of the creek, especially when silver and red salmon are running from late July through early September. Fishing regulations restrict angling to Portage Creek during these runs. The creek's silty water makes seeing the fish difficult, making the confluences of clear streams with Portage Creek the most popular fishing spots. Anglers were regularly seen at the mouth of the creek this year, for

the first time. Fishing for salmon in Portage is expected to grow as word gets out that there are road-accessible locations for this activity, relatively close to Alaska's major population center.

Access Points

The proximity of Portage Glacier Road affords many places to access the creek on foot; however only two sites in the valley provide access for trailered boats. All access points are shown on Maps 1-5.

The first site, near the visitor center, provides access to the shallow, upper portion of the creek. The road to this site comes from Portage Glacier Rd, just before crossing the Portage Creek bridge. Power boats are not prohibited from using this site, but none have been observed here recently. This rustic launch was established to provide access to Bear Valley before road access existed, primarily for hunters. It is less than 200' from the deeper lake water where a motor can safely operate; boaters would paddle, line or pole their way into the deeper water. *Use of Portage Lake is now closed to all boats except for the commercial tour operation and a corridor for paddle-powered craft starting in Bear Valley and heading south easterly approximately 2 miles to Portage Pass trail.*

The other boat launch, located approximately 2.2 miles east of the Seward Hwy, is all that remains of an airstrip. The creek eroded a large section of the airstrip, and a portion of the remainder has been mined for gravel. No work has been done to enhance this site as a boat launch, it leads directly into the creek's current with nothing to diminish the creek's velocity or provide an eddy.

Another option for power boaters is to launch at the Twentymile River boat launch, located off the Seward Hwy, approximately 3 miles north of the Portage Hwy jct. with the Seward Hwy. Launching from this site requires boaters to navigate across several miles of tide flats to access Portage Creek. Boaters need to consider the tide schedules and know where the channels through the tide flats are located in order to successfully use this option.

Other potential public access points to Portage Creek include:

1. Power line access road near visitor center(currently used by pvt. vehicles, FS has requested power company install a gate to control vehicular use; creek often floods this road during rain events)
2. off Williwaw Nature Trail north of Williwaw ponds (no developed access, creek is under 50' from trail for approximately ¼ mile
3. Black Bear CG (the creek is adjacent to road for approx. ¼ mile across Portage Glacier Rd from CG)
4. Trail of Blue Ice at Williwaw Creek Tied Arch bridge: the trail bridge is approximately 50' upstream of the road bridge; access Williwaw Creek from trail, walk under bridges and along Williwaw Creek to access Portage Creek, this is western end of access described from Black Bear CG, and a popular fishing spot.
5. North of Tangle Pond, undeveloped access (proposal to construct pedestrian trail around this pond could include access to creek)

6. Power line access at approx. 2.8 miles east of Seward Hwy where the power line crosses Portage Glacier Road. The power company clears brush in order to access their line; people drive out to creek along this cleared route. (this road is currently used by pvt. vehicles, FS has requested power company install a gate to discourage vehicular use; it is not a hardened road and has no developed egress onto Portage Glacier Rd)
7. Blocked road at approx. mp 2.6 of Portage Glacier Road. Parking space for several vehicles with foot access to large gravel bar on creek approx. ¼ mile in.
8. Across Portage Glacier Road from Explorer Glacier Parking, creek is adjacent to road and accessible on foot.
9. Old airstrip boat launch site, 2nd drive-in site for trailered boat access
10. Permitee's road off Moose Flats Day Use Area. Private Cabin on north side of creek has road access to south side of creek. This road winds through cottonwood forest and provides foot access to the creek in several locations.
11. Back Road to "Roseland's". Gate across road prevents vehicle access except for private property owners. This unauthorized road leads to shallow water ford across the southern branch of Portage Creek.
12. Parking area on the Turnagain Arm side of the Seward Hwy, at MP 79.4, on the south side of Portage Creek Bridge #2. Approximately 10 vehicles could park here, used as take-out for float trips, and access for fishing. The summer of 2009 was the first time anglers have been observed fishing from the gravel bar on the north side of the creek; using this site requires walking across the highway bridge with minimal shoulder.

Visual characteristics of the creek

The view from the creek presents a shoreline that is approximately 65% free of man-made features adjacent to the shore. In most places where these features are visible from the creek, natural vegetation is also present, softening the effect of these elements. The shorelines generally have dense willow and alder under a young spruce forest on the upper river. The overstory becomes predominantly cottonwood on the lower river. The density of the vegetation screen views from the river into adjacent lands beyond the immediate foreground, but bank heights ranging from under a foot to ten feet do not obscure views of the surrounding mountains and glaciers. Wide gravel bars form on the inside of the creek's bends, the lower portions of which are frequently inundated during flood events, and they are continually shifting as the water channel changes. The creek's naturally-appearing characteristic is interrupted where the road or railroad is adjacent to the creek, by a couple cabins, and the power line.

There are two small cabins visible from the creek, both on private property, across from "Roseland's", near the mouth of Portage Creek. Roseland's has many buildings, some are cabins rented out for homes, some are horse barns, but none are visible from either channel of the creek.

Chugach Electric Company provides electric service to sites in Portage valley and to Whittier from a distribution line that crosses Portage Creek three times. A high voltage

power transmission line between Anchorage and the Kenai Peninsula crosses the creek near the property line between Roseland's and the Alaska Railroad.

Portage Glacier Road is visible from the creek in 5 locations:

1. From the bridge across Portage Creek near the visitor center
2. Across the road from Black Bear Campground, for approx. 1,500 feet. From the road, the creek is visible for approx. 10 seconds when traveling at the posted speed limit (55 mph).
3. Between Explorer Glacier parking and Five Fingers parking, for approx. 250 feet. From the road, the creek is visible for approx. 3 seconds when traveling at the posted speed limit (55 mph).
4. Across from Explorer Glacier parking for approx. 100 feet, visible for approx. 2 seconds from the road when traveling at the posted speed limit (55 mph).
5. Across the road from the entrance to the Portage Work Center (mp 2 Portage Glacier Rd) for approx. 720 feet, visible for approx. 4 seconds from the road when traveling at the posted speed limit (55 mph).

At sites numbered 2, 3 & 5 above, the creek is continuing to erode into the bank. A fiber optic cable installed on the creek side of the road had to be moved to the opposite side to prevent it from being damaged by the erosion. The top of bank is within 15' of the edge of pavement at the closets point, across from the work center.

The Seward Hwy and Alaska Railroad cross the two channels of Portage creek near its mouth. These bridges are parallel and within 150' of each other, with the railroad bridge upstream of the Hwy bridge.

Besides the bridges across the creek, the railroad is visible from the creek in 3 locations:

1. Just west of entering the railroad tunnel near the visitor center. This is one of the three places the power line crosses the creek, as it is routed through the tunnel to provide power to Whittier.
2. For approximately 1,500 feet at a site about half-way up the valley. The creek in this location has two channels, the railroad is adjacent to the shallower, north channel; it is less likely to be used by people floating the river. Also, the creek channel in this area flows through old gravel scrapes. Gravel was also removed on the other side of the tracks in this location creating shallow ponds.
3. For approximately 700 feet at a site about a third the way into the valley. At this location the two channels have rejoined and the railroad grade presents a barrier to the creek's natural stream flow, resulting in severe erosion to the track's foundation. A variety of erosion control techniques have been used here from scrap metal to rock rip rap. This location provides the most significant departure from a naturally-appearing landscape.

Audio Characteristics

Highway or Train-generated noise can be heard from the creek whenever the creek is within a hundred feet of these features, approximately 40% of length of the creek when the southerly, deeper channel is used. The shallower, northern channel is located further

from the road, but is closer to the railroad, although for a shorter total distance. The railroad does not generate noise at the almost constant rate as the road, making this stretch of creek a quieter, less developed float than the southern channel.

Both visual and noise disruptions to natural conditions occur at intervals along the entire length of the creek. The longest length of creek without these disruptions is approximately 20% of the entire length; more often there is a short stretch of natural wild land followed by a short disruption, etc.

Purpose of the Analysis

This analysis looks at implementing the Forest Plan to determine the recreation capacity for Portage Creek in order to make decisions concerning the amount of summer season outfitter/guide use permitted to operate on the creek. The total recreation use (guided & non-guided) needs to insure the recreation experience and natural resource values of Portage Creek are not compromised.

A capacity for Portage Creek is sought because this creek is included in the "Three Rivers Study". The other two rivers in the study, (Twentymile and Placer) both empty in Turnagain Arm, with Portage situated between the other two. Its proximity to the other two rivers and its ability to offer similar recreation activities, albeit in a more developed setting, make it logical to consider when establishing how much of what kind of use should be allocated between the three rivers.

Existing Situation:

Currently, there has been no recreation capacity established for Portage Creek. Recreation use is by both independent users and through commercial operators who have special use permits to provide guided float trips on the creek. There are currently three Outfitter/Guides that are under permit, and one that has requested a permit for jet boating on Portage Creek and Lake. The use over the past five years is summarized below:

Year	reported use (client days)	Earliest to latest dates of use
2005	154	June 28 - September 1
2006	125	July 18 – Oct 28
2007	121	June 6 – August 22
2008	27	July 12 – August 31
2009	192	June 11 – September 3

The bulk of the commercial use has come from one company. Two companies have never used their permits to float the creek, one in operation since 1997, the other since 2005. A fourth company had a permit for two years (2006-7), with a total of 10 client days, and is no longer in business. There is one request for motor boat trips for the creek and lake. A client day is one person using the national forest for any amount of time on one day.

The amount of independent, non-guided use has not been quantified. As discussed above, the majority of use is in the summer; viewing the creek from the road or railroad would be the highest use it receives, with fishing by people walking or boating in next, and day-use float trips the third highest use.

Use of Portage Valley has not seen dramatic increases over the past five years, but has steadily grown with population increases. When tourism numbers are down, so are use numbers for Portage valley. 2008 use was lower due most likely to high gas prices, 2009 use has not rebounded even though gas prices were lower, the overall economy forced many people to scale back on leisure activities.

Forest Plan Direction:
The Revised Chugach National Forest's Land and Resource Management Plan (Forest Plan) was published in May 2002**.** It provides guidance for all resource management activities on the forest, establishing goals and objectives, desired conditions, standards and guidelines, direction for specific areas, and recommendations for the establishment of special designations, including Wild & Scenic Rivers. The following excerpts from the forest plan apply to this Portage Creek capacity study.

Wild and Scenic Rivers Goals and Objectives:
Goal: manage rivers recommended for Wild & Scenic River designation to maintain their outstandingly remarkable values. (orv's)
Objectives: manage recommended river segments consistent with Forest management area direction to protect their free flowing characteristics, tentative classification and orv's as follows: Portage Creek (Recreational) for scenery and visual features.

Kenai Peninsula Recreation & Tourism Desired Condition: During the summer, non-motorized recreation use will predominate across the area, including canoeing, rafting and other forms of boating on lakes and rivers.

Forest-wide Recreation and Tourism Standards and Guidelines:
Standard no. 2-Management activities will be designed to meet the ROS class as mapped.
Guideline no. 1-Management activities should ensure that levels of use are consistent with the ROS Class characteristics and recreation activity intensity levels by prescription.
Guideline no. 3-No construction of developed recreation facilities within floodplains unless there is no practical alternative, or is needed to protect or enhance water quality or riparian dependent resources,

The following table describes the ROS Class Characteristics for the mapped ROS class for Portage Creek, (Roaded Natural (RN)), excerpted from the Revised Forest Plan, page 3-38.

ROS class	Solitude on trails & shorelines	Level of encounters		Maximum party size
		On Trails	On Shorelines	
RN	Moderate - low	>15 parties/day	<15 parties/day	NA

The Levels of Encounters "On Trails" and "On Shorelines" are both the used for this capacity analysis. The Creek acts like a trail, as it is a linear feature that people move along, but many people also use Portage Creek by walking into a spot along its shoreline and enjoying the water flowing by while fishing or just enjoying the scenery. The most common use of this creek is as a visual feature as viewed from the road or train.

The next table, from page 3-40 of the Forest Plan, describes the Recreation Activity Intensity Levels by prescription, which is how much and how intense of a development would be appropriate for Portage Creek. The higher the development scale number, the more refined a development can be, where a 1 could mean a primitive access road with area to turnaround, a 4 could mean campsites with paved roads and covered shelters.

prescription	Development Scale			
	campsites	campgrounds	Day use sites	Viewing sites
Rec River	3	4	4-5	4

The above table shows that if this capacity analysis recommends adding facilities, they could be fairly highly developed. However, to serve people using the creek they would most likely be located in the floodplain, which would conflict with Forest-wide Recreation Guideline no. 3.

Management Area direction for the Creek. The prescription for the area within ½ mile of the river is #331 – Recreation River Management Area, found on pages 4-77 thru 4-79 of the Forest Plan. Direction that applies to the recreation capacity is found in the Management Intent, Social Systems Desired Condition section:

"provide good opportunities for recreating in social groups, with frequent interaction with other river recreationists" frequent encounters should be expected on or adjacent to the river (creek)"

"Tourism related activities should be able to accommodate larger group with facilities."

Also, in the Activities Table for this management area, *40% of the capacity is allocated to Outfitter /Guide use.*

Issues and Concerns:
Forest Recreation Specialists, Special Use Permit Administrators, and Fishery Biologists were consulted for recreation capacity concerns for Portage Creek. A public scoping letter and meeting in May 2009 as part of the Three Rivers planning revealed several concerns relative to Portage Creek. Concerns include:

Portage is one of the prettiest creek you can drive to in Alaska, would like to keep it wild looking, clean and beautiful, but have found increasing areas of garbage and human wastes.

The ecological importance of this region cannot be understated. It is Extraordinary and Unique. There is no other place like it, period.

ATV use needs to be seriously limited in this region.

The Forest Service needs to appreciate concerns from ALL resource users, including birders and wildlife watchers, wildlife and bird viewers have just as much right to "use" these areas as others who do more impactful things like fish, windsail, and boat.

All the things that go along with this sport (Fishing) affect this area as well. Waste, lost line, human waste, salmon remains piling up on banks, interaction with wildlife (bears), lures and line left all over beaches, camping areas trashed…etc etc.

Educate Users on Dangers of Area – signs

Educate Users on Fragility and Biological Importance of the Region. People who know the uniqueness and special qualities of an area are more likely to protect it. Appeal to the impactful users (boaters, windsailers, fishers) about why refuse and human waste is not in their own interest. (Fishers mostly should appreciate this…) Provide historical sign-posts, educational areas, extend what was done along the road along the Arm here, boardwalk into marsh

Limit Use/ Permits for Boats. Every heavily used River comes to this point. Perhaps that time is now. Not sure. How much gas and oil are getting in? How much junk is going in the Rivers?

I would like to see these Rivers stay wild**.** Area needs to be protected, not turned into to some recreational haven for people who really do not care that much about it but are just out for fish or a thrill.

We would like to see more attention to protecting the incredible natural resources of these valleys before any more motorized use is permitted. We specifically do not want more commercial motorized use of valleys.

We would like to see quiet recognized as a valuable and threatened natural resource. Access to quiet recreation in local low-elevation valleys has been almost completely taken away from us.

I am interested in preserving the peace and quiet of these areas. Heavy boat traffic, ATV use, and gun fire are conflicting activities with those of us who share the sense of "wilderness in preservation of the world."

As for Portage River, I would agree with the gentleman at the meeting who suggested that this river be limited to non-motorized

> use. If there are repercussions from land owners on the river, maybe they could have some sort of "grandfather rights" and receive a special permit for use of motorized boats to transport goods to their properties.
>
> Would like to see portage as non-motorize, except for owner-access to pvt. lands, would consider giving that up. One of Portage's best fishing holes is along my land, large boats coming in from 20mile launch, catching red illegally and silvers (legal), may have 100 people on good days. Boats are contributing to erosion.

There have been no comments saying directly "there is too much use on Portage Creek", the people who commented are concerned about increasing the noise and other effects caused by motorized boats and destroying the wild character of Portage, and they feel Portage is an area with unique and valuable wild-land assets.

Forest service personnel have additional concerns or issues. One concern is that there has been no documentation of how much recreational use is actually occurring on the creek. The amount, timing, and type of independent, non-guided use is known only through general observations by Forest Service personnel over the past decade.

Safety is another concern; this creek, generally considered a class 2 float, has had fatalities from recreationists. It is precisely because of it easy access and appearance as an easy float that makes it hazardous. There are no existing warning or informational signs indicating the hazards users should be prepared to deal with. The popularity of small non-motorized boats and increasing use of power boats on the lower river could lead to safety concerns if users fail to respect each other's safe modes of operation.

Unauthorized vehicular access on power line access routes could escalate and result in additional garbage and human waste accumulations.

Unauthorized "no trespassing" signs and gates on National Forest Lands deter people from using some areas.

Access to popular fishing sites by pedestrians using Alaska Railroad tracks and land is not safe and is trespassing.

Boats and people may be transporting invasive species into the creek; there is no attempt to inform people of the need to clean their gear, and there is no cleaning station nearby.

The upper stretch of the creek is often too shallow to float. There is no easy put-in where the creek becomes more floatable. Look at adding safe put-in with parking as close to Black Bear CG as possible. One place to consider would be Tangle Pond. This site has existing parking, people could easily float across the pond and portage a short distance to the creek if a trail were constructed here.

Capacity Recommendations:

Based on information presented in this report, the factors determined to be the most relevant in determining capacity are:

1. Capacity at existing creek access points
2. effects to view of creek from road or train
3. safety for creek users
4. capacity allocated to O/G's based on encounters and ROS

1. Access to the creek is plentiful for pedestrians, but fairly limited for people who want to drive close to the creek to launch a boat. Capacity for vehicles is estimated at:
   - Near BBVC: access to site by high-clearance vehicles with trailers; no developed parking, rough road. Can drop off boat and gear, but recommend parking in visitor center parking lot. Visitor center lot has large capacity that is available for floaters, no capacity issue, but capacity at the put in is three vehicles at a time. Up to three vehicles at the put-in site. Sanitary facilities available in Visitor Center or nearby at two vault toilets.
   - Old Airstrip: 6 highway vehicles with trailers, no sanitary facilities
   - Highway bridge: 10 highway vehicles; 6 if they all had trailers, no direct access to river, must be able to hand-carry all boats out, no sanitary facilities

   For pedestrians, access is limited by willingness to scramble through brush, and walk along creek on rough ground. There are no developed pedestrian-accessed viewing areas or walkways along Portage creek.

2. The effects to the view of the creek from the road or railroad could limit capacity. Staggering launches would be the most effective way to ensure that views of the creek are never filled with boats. Until the creek is approaching capacity, this technique is not needed. Generally, with the current low use, people will naturally space themselves out, not wanting to be chasing another party down the river. Limiting each area visible from the road or train to having no more than 4 rafts visible at one time would keep the creek looking fairly wild, a place not over-run by people, even though Mnagement Area direction states that "*frequent encounters should be expected* and *to accommodate larger groups"* Special Use Permits could stipulate groups sizes that can fit into 4 rafts, and could specify times of the day to operate, keeping floaters off the creek before and after certain times of the day, to instill a sense of remoteness when viewed by people driving the road or riding the train.

3. Safety concerns caused by conflicts between motorized vs. non-motorized boats, as well as the effects to the view of the creek can be partially addressed by not issuing special use permits for motorized boats on the creek. There are none currently permitted, but there has been some requests for motorized boat operations on the creek. Closing Portage Creek to all motorized use is not practical, and could result in issues with the State. Limiting boat size, type and horsepower could be considered, but would require more intense management of the boating activity on the creek.

4. The Forest Plan, through adoption of ROS guidelines for the creek, has set the numbers of encounters at <15 parties/day on shorelines, and at > 15 parties/day on trails. A party would constitute a group of boaters traveling generally within sight of each other. When on shore, a party could be the people who have disembarked from this same group of boats, or a group of people who walked to the creek's shoreline. As people view the creek from the road or train, this encounter limit indicates they should not see more than 15 parties. Currently, the creek is used so infrequently that it is a treat to catch a glimpse of a party floating the creek. The Forest Plan has allocated 40% of the total capacity for Outfitter Guides (O/G,s).

These four capacity limits were applied to determine the following recommended capacity:

Outfitter Guides: permit non-motorized use only. Up to 6 parties/day can use the creek, with each party required to fit onto no more than 4 rafts, or up to a dozen single or double-person boats. Launches staggered by a minimum of 30 minutes. Launches can occur between 9am and 5pm, keeping a commercial raft-free view available before 9am and after 8pm. This limit is recommended so that a person who has walked into one of the creek would not encounter more than 6 parties of commercial users on any one day which is just above the 40% of all encounters they should expect (ROS guideline says >15 encounters from shorelines, management area prescription says 40% for O/G's, 40% of 14 is 5.6; 40% of 15 is 6). This person could encounter an unlimited number of no-commercial float or motorized parties, but current use levels are so low this is highly unlikely.

Facilities: Current size, lack of improvement, and un-identified access points make it hard to find out where to access the creek. This has helped keep recreation use low on the creek, well under its potential capacity. By improving access with a limited number of parking spaces, access can be managed to stay within capacity levels, and those who do use the creek will have the opportunity to learn how to be more safe, be more aware of other users and sensitive resources on the creek.

1. Improve Portage Creek put-in near BBVC by grading the road, signing the put-in with information relative to the creek:
    - map showing length of creek in miles, float options, take-outs, pedestrian access points; potential hazards of this float, including info about water depths so people can make informed decisions about creek conditions for their craft, show pvt. lands,
    - kids don't float lifejacket station,
    - fishing regulations,
    - invasive species best practices

    Install "No Parking" signs at launch site, including "park in visitor center lot" as part of these signs.

Include this access need when redesigning the Visitor Center entry road/parking areas. The existing access to this launch is from the main road, just before crossing the bridge over Portage Creek. Consider where the best road jct. access to creek would be with redesign work, and include "Portage Creek Access" directional/approach signs when best location is determined. Establish up to ten parking spaces for vehicles with trailers with the redesign effort.

2. Create access point on the north side of Tangle Pond. Add information signs to parking at tangle pond with map to show how to access this carry-in creek access. Include same creek information as described above. Manage Tangle Pond as day-use only so that parking is available for creek users and is not taken over by overnight users. Construct short trail from pond to creek; eventually construct trail from parking to this short portage trail. At the creek install post with "Tangle Pond Portage Trail" sign so creek users are notified about this trail back to Tangle Pond.
3. At Old Airstrip launch site, install approach signs on Portage Glacier Rd to direct people to this access opportunity. Install same creek information as described above.
4. At parking near Seward Highway Bridge, install same creek information sign. Consider improving site by removing guardrail on creek side and constructing hardened trail to high tide. Access to creek beyond high tide is over mudflats, it coats rafts, canoes, etc., but a gravel surfaced trail below high tide would be continually washed away by the tide.

Conclusions:
Using this allocation, managing permits as suggested, providing appropriate safety information, relaying practices to minimize introduction of invasive species, and developing a few small creek access sites, the recreation capacity of Portage Creek will not be exceeded. If use of Portage Creek begins to result in more than 4 rafts at one time being visible from the road or train on a frequent basis, or when more than 14 parties are seen on the creek's shorelines while driving the road or by people using the shorelines, or when there is an increase in the rate of injuries or near misses on the creek, then managers should consider establishing a permit system to use this creek. Until then Portage Creek should remain available to the general public to use without regulation, whenever the mood strikes.

Further Study:
It is recommended that this allocation system be monitored by the Forest Service and adjustments made based on findings. Recommended monitoring includes further investigation on water depths relative to easily visible markers at launches, and gathering data on amount, type and distribution of parties using the river, especially non-guided parties.

Results from this monitoring will help make more informed decisions about future management options for this river.